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Making connections: Social identification with new treatment groups for lifestyle management of severe obesity

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Groups are regularly used to deliver healthcare services, including the management of obesity, and there is growing evidence that patients' experiences of such groups fundamentally shape treatment effects. This study investigated factors related to patients' shared social identity formed within the context of a treatment group for the management of severe obesity. A cross-sectional survey was administered to patients registered with a UK medical obesity service and enrolled on a group-based education and support programme. Patients ($N = 78$; $M_{BMI} = 48$ on entry to the service) completed measures of group demographics (e.g., group membership continuity) and psychosocial variables (e.g., past experiences of weight discrimination) and reported their social identification with the treatment group. The results showed that patients identified with the treatment group to the extent that there was continuity in membership across the programme and they perceived themselves more centrally in terms of their weight status. Weight centrality was negatively associated with external social support and positively associated with experiences of weight discrimination. Group continuity was positively correlated with session attendance frequency. Patients presenting to clinical treatment services with severe obesity often do so after sustained weight loss failure and exposure to negative societal experiences. This study highlights that providing a treatment environment wherein these experiences can be shared with other patients may provide common ground for development of a new, positive social identity that can structure programme engagement and progression.

KEYWORDS

group-based health interventions, group membership, severe obesity, social identity

1 | INTRODUCTION

Compared with normal-weight populations, people with obesity (body mass index [BMI] ≥ 30) report a range of physical (e.g., type 2 diabetes, cardiovascular disease, stroke and cancer; Haslam & James, 2005) and

psychological (e.g., anxiety, depression, low self-esteem and loneliness; Friedman et al., 2005; Kim, Oh, Yoon, Choi, & Choe, 2007; Phelan et al., 2015) ill-health outcomes. Obesity is associated with an increase in all-cause mortality, even after controlling for risk factors such as smoking (Manson et al., 1990; Waaler, 1984). People with

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obesity can come to define themselves centrally in terms of their weight (Hunger, Major, Blodorn, & Miller, 2015) and are often targets of discrimination and prejudicial attitudes that become internalised and reinforce behavioural patterns contributing to the condition (Farrow & Tarrant, 2009; Puhl, Moss-Racusin, & Schwartz, 2007; Puhl & Suh, 2015; Wang, Brownell, & Wadden, 2004). The current research focused on the experiences of people with severe obesity—those with a BMI of 40 or higher—for whom the health risks are even higher (Finkelstein et al., 2012). In the United States, obesity prevalence rates are predicted to increase over the next two decades by 34% to 42% overall, and severe obesity is expected to increase by 6% to 11% (Finkelstein et al., 2012). Comparable increases are forecast for other Western countries including the United Kingdom (NCD Risk Factor Collaboration, 2016).

The study reported here reflected a rapidly growing interest in the potential health benefits of group-based interventions (and mechanisms within these; see Borek, Abraham, Greaves, Gillison et al., 2018) and more broadly the documented links between social group membership and health (Haslam, Jetten, Cruwys, Dingle, & Haslam, 2018; Jetten, Haslam, Haslam, & Branscombe, 2009; Jetten, Haslam, & Haslam, 2012; Khan et al., 2014, 2015). Replicated across different types of research designs (e.g., cross-sectional, longitudinal and experimental), social identification has been shown to be associated with improved health and well-being in a variety of group settings, including residential care (Gleibs et al., 2011), support groups for chronic conditions (e.g., Parkinson's disease and multiple sclerosis; Abell, Baird, & Chalmers, 2017; Wakefield, Bickley, & Sani, 2013) and in groups for people experiencing symptoms of social isolation and affective disturbance (Haslam, Cruwys, Haslam, Dingle, & Chang, 2016). The psychological connections that shape social identification have also been found to positively influence wound healing (Robinson et al., 2017).

Social group membership can thus be experienced as a supportive and empowering motivator of behaviours that promote (or undermine) physical and psychological health (e.g., Cameron et al., 2018; Ford, Scholz, & Lu, 2015; Greenaway et al., 2015; Walker, Longmire-Avital, & Golub, 2015)—including behaviours that contribute to obesity (Cruwys, Platow, Rieger, Byrne, & Haslam, 2016; Higgs, 2015; Oyserman, Fryberg, & Yoder, 2007; Robinson, Fleming, & Higgs, 2014). For example, Cruwys et al.'s (2016) Situated Identity Enactment (SIE) model of eating behaviour highlights the important role of identity-based norms that structure group members' health decision making in specific contexts. Similarly, Oyserman et al. (2007) demonstrated that for members of racial-ethnic minority groups in the United States, health promotion behaviours such as eating nutritious food and exercising were *not* regarded as ingroup defining but instead were seen as behaviours normatively associated with White middle-class groups. Priming racial-ethnic identity increased participants' sense of fatalism about their own health.

Such findings may have implications for the design of weight loss programmes for obesity. Weight loss programmes, both for people at lower levels of obesity/overweight, and for those who have severe obesity, share a common focus on targeting change to lifestyle behaviours that contribute to weight gain. These programmes are often delivered in

Key Practitioner Message

- Patients' social identification with treatment groups can be a valuable resource for delivering intervention content.
- Structural features of the treatment group and psychosocial factors associated with patients' past experiences may structure social identity development.
- Understanding these influences may allow practitioners to plan treatment programme content and positively shape patients' emerging social identification with the treatment group.

group settings (see Farrow, Tarrant, & Khan, 2016), reflecting a wider (international) trend in the management of chronic health conditions (Booth, Cantrell, Preston, Chambers, & Goyder, 2015; Greaves & Campbell, 2007). For example, commercial weight loss programmes typically utilise group settings to support members to change lifestyle behaviours and promote normative contexts in which members can share information about healthy eating, exercise and diet (e.g., Madigan, Daley, Lewis, Jolly, & Aveyard, 2014). Treatment groups for people with severe obesity, while often delivered in clinical settings, are similarly organised around the delivery of lifestyle modification programmes comprising dietetic and physical activity education, advice and social support (Dietz et al., 2015; NICE, 2014). Recent evidence indicates some support for effectiveness of group-based behavioural interventions for overweight and obesity (BMI \geq 25: Borek, Abraham, Greaves, & Tarrant 2018), although there is considerable variability in treatment approaches (Martin, Smith, Mason, & Butt, 2012), and poor reporting of group-based health interventions has generally been noted (Borek, Abraham, Smith, Greaves, & Tarrant, 2015; Hoddinott, Allan, Avenell, & Britten, 2010).

However, two recent studies highlight the potential health benefits of developing a positive social identity within treatment groups for obesity, and the benefits more generally of the theoretical framework provided by the social identity approach to health (Jetten, Haslam, & Haslam, 2012). Tarrant et al. (2017) conducted an interview study with patients enrolled on a group programme for severe obesity. Findings showed that establishing shared social identity with others in the treatment group structured patients' engagement with programme materials and was regarded by them as fundamental to experiences of social support and group functioning, including progression through the programme. Although not specifically focused on social identity mechanisms, Nackers et al. (2015) found that conflict within treatment groups (which could indicate low levels of social identification) was associated with lower weight loss and patient adherence, and greater attrition from a weight management programme for obesity, compared with groups not in conflict.

Such evidence makes clear that the social identity that emerges in obesity treatment settings can motivate patients' engagement with

programme materials and have positive implications for health. However, this potential of group-based programmes for obesity to actively shape the social identities of individuals enrolled on them has not been considered in the design or delivery of interventions—a feature that may help explain the observed variability in treatment effectiveness (Borek et al., 2018). In other words, despite considerable insights into the links between social group membership, social identity and health outcomes, actually, very little is known about the factors that contribute to the *establishment* of new social identities in treatment settings—that is, how patients come to form psychological connections with each other in new treatment groups. The current study focused on this gap.

We investigated factors that may shape patients' sense of social identity as members of a new treatment group for the lifestyle management of severe obesity. Like services for other chronic conditions, new patients on a group programme for the treatment of severe obesity are unlikely to be familiar with other group members and their identification with the group is likely to be low initially (see Tarrant et al., 2016). Some patients may develop psychological connections with other members with little active facilitation across a group treatment programme, but, for others, connections may not emerge—a situation that could undermine health outcomes (e.g., Nackers et al., 2015). Indeed, evidence indicates *variability* in group members' levels of social identification with obesity treatment groups (Tarrant et al., 2017). Given the observed relationship between social identification and health (see Haslam et al., 2018), it seems clear that the full health potential of treatment groups will best be realised when as many group members as possible can be supported to socially identify with the group. Understanding factors associated with patients' emerging social identity is therefore important and may offer insights into what facilitators of treatment groups (both for severe obesity and other health conditions) may attend to in this regard. The development of care guidelines for practitioners delivering obesity care is acknowledged as a necessary part of the global response to severe obesity (Dietz et al., 2015; Roberto et al., 2015). The current study aims to inform this long-term endeavour.

Several mechanisms have recently been proposed as potentially important to consider in the design of group-based health interventions (e.g., Borek et al., 2018). The mechanisms of action in group-based interventions (MAGI) framework (Borek et al., 2018) describes several mechanisms that may impact on group processes (and social identity). Some of these mechanisms relate to the structural features of the group programme (e.g., programme content and delivery techniques), and others relate to the individual characteristics and experiences that group members bring with them to the group and which may structure their engagement and progression through a programme. However, it is not yet known which such variables, if any, may structure group members' emerging identification with the treatment group—either in the treatment of obesity or other chronic health conditions.

As a first step towards addressing this issue, the current study administered a cross-sectional survey to patients enrolled on an obesity group programme in the United Kingdom to explore selected

mechanisms identified by the MAGI framework. Other than assessing patient (e.g., BMI) and group (e.g., continuity of group membership and attendance frequency) demographics, the study assessed psychosocial variables that primarily explored the interaction between social relational experiences outside the obesity service and treatment group identification, including social support, multiple group membership (MGM), centrality of weight status and experiences of weight based discrimination. Social support may, on the one hand, serve to help patients to engage with the obesity treatment group and adopt the lifestyle changes that it prescribes for weight loss. On the other hand, unhealthy lifestyle choices are known to be embedded within social relations and identities even if otherwise supportive (Oyserman et al., 2007; Tarrant & Butler, 2011) and may therefore undermine lifestyle changes promoted in the treatment group. MGM (Haslam et al. (2008) presents another potential paradox. Patients who belong to, participate in and identify with multiple groups may also be more likely to identify more strongly with new groups to which they find themselves belonging—in the current study, the obesity treatment group. However, it is also possible that patients who already belong to and benefit from a greater number of social group memberships will be less motivated to engage with new group memberships. Furthermore, in an earlier qualitative study (Tarrant et al., 2017), patients with visible obesity reported that the visible excess weight status of other patients in the obesity service, and their shared experiences of having excess weight, encouraged the formation of a shared social identity. Patients whose weight status is more central to their self-definition may therefore also be more likely identify with the treatment group to a greater extent. Moreover, perceived discrimination has been shown to increase identification with a stigmatised social identity (Branscombe, Schmitt, & Harvey, 1999). Accordingly, patients who perceive they have previously experienced discrimination based on their excess weight may be more likely to self-define in terms of their weight status and in turn identify to a greater extent with the obesity treatment group.

The study was designed to allow a tentative yet integrative analysis of the relative contribution of these different variable sets to patients' social identification with their obesity treatment group. Thus, the study research question was: to what extent do factors relating to group organisation and programme delivery and those relating to individual psychosocial experiences explain patients' social identification with their obesity treatment group?

2 | METHOD

2.1 | Research context and group programme

Patients participating in the study were recruited from a medical obesity service running in South West UK and commissioned by the UK National Health Service (NHS); it is an established service from which patients may progress to other treatments such as bariatric surgery. Eligibility for admission to this service reflected National Institute for Health and Care Excellence (NICE) guidelines (NICE, 2014) in place at

the time of the study and were (1) BMI ≥ 40 kg/m² or (2) BMI ≥ 35 kg/m² with comorbidities (type 2 diabetes, uncontrolled hypertension, hyperlipidaemia, sleep apnoea and/or severe osteoarthritis). The group programme on which patients were enrolled comprised six sessions delivered across a 6-month period in a clinical hospital setting. Patients had to engage with the programme, but full attendance was not compulsory, and progression to surgery or further services was determined by individual health needs and outcomes (including achieving a weight loss of 5–10 of body weight). Group size ranged from 4 to 12 patients, reflecting variability in patient attendance. Group sessions predominantly focused on dietary education and support and were led by a dietician experienced in group facilitation and motivational interviewing, supported in some sessions by a clinical psychologist. Patients were not assigned to a specific group; multiple sessions ran every week, and patients were able to attend sessions that could be fitted around schedules and logistical constraints. At the end of the group programme, patients' progress against programme objectives was assessed, following which they were considered for progression to further specialised interventions, including surgery, and these were generally supported through one-to-one sessions with a dietician and/or clinical psychologist. Locally available service evaluation data indicates patient improvements on a range of clinical outcomes across the group programme, including weight (BMI), eating patterns and concerns and health-related quality of life. Ethical approval for the study was provided by the UK National Research Ethics Service (NRES ref: 13/SW/0050).

2.2 | Study sample and procedure

Study eligibility was open to all patients registered with the obesity service and enrolled on the group programme. Potential participants were introduced to the research by a member of the research team during a planned group session. Interested patients ($N = 101$) were subsequently contacted individually and given further information about the study. Written consent was obtained at least 24 h after patients had received the information sheet for the study: 78 of the 101 interested patients consented to participating in the study (57 females, 21 males; average age = 51 years, $SD = 12$ years; age range = 24–79 years). Participating patients' BMI at the time of admittance to the obesity service ranged from 35 to 64 kg/m² ($M = 48$, $SD = 6$), and they had on average attended four ($SD = 2$) group sessions at the time of survey administration. All participants chose to receive and return the survey by post.

2.3 | Measures

Patient demographics. Age, gender and weight data (BMI) were extracted from patient notes recorded as part of the obesity service.

Group demographics. Patients indicated their perceptions of *group continuity* for the sessions they attended (i.e., whether their group comprised mostly the same or different patients at each session) using

a 7-point scale (1 = *mostly different people*, 7 = *mostly the same people*). Given that patients were recruited at different stages of the programmes, they were also asked to indicate the *number of group sessions* that they had attended at the time of completing the survey. Based on previous literature showing a positive association between group continuity and identification (Herrera, Sani, & Bowe, 2011), we expected that patients who had attended a greater number of sessions, and with mostly the same people, would identify more strongly with the treatment group.

Psychosocial variables were primarily assessed to gain an understanding of the nature of the interaction between social relational experiences outside the obesity service and treatment group identification. Patients reported the degree to which they experienced *external social support* using the *Multidimensional Scale of Perceived Social Support* (MSPP; Zimet, Dahlem, Zimet, & Farley, 1988). The 12-item scale assesses perceptions of social support from three sources outside of the obesity service: family, friends and a significant other (sample item: 'I can count on my friends when things go wrong'; 1 = *very strongly disagree*, 7 = *very strongly agree*). Scale scores were averaged to create a total support score, with higher scores indicating greater perceived support. The measure has been validated in a range of healthcare settings (see López & Cooper, 2011).

Membership of other social groups was recorded using the *multiple group membership* subscale from Haslam et al. (2008). The MGM measure comprises four items assessing belongingness, participation, friendships and ties in multiple groups outside the bariatric service (sample item: 'I join in the activities of lots of different groups outside [the obesity service]'; 1 = *do not agree at all*, 7 = *very strongly agree*). The scale has been validated in different healthcare settings (e.g., Jones et al., 2012; Jones & Jetten, 2011). Scale items were averaged and higher scores indicated stronger ties to external groups.

Centrality of weight status was assessed using a 7-item scale adapted from Cameron (2004). Identity centrality is a dimension of social identity that reflects the psychological salience of a particular social category membership—in the current study as someone with excessive weight (sample item: 'I often think about the fact that I am a person with excessive weight'; 1 = *very strongly disagree*, 7 = *very strongly agree*). Scale items were averaged, and higher scores indicated greater identity centrality of excessive weight. The scale has been validated previously (Cameron, 2004).

Patients also reported their experiences of discrimination due to weight status using a 6-item measure of *perceived discrimination* adapted from Branscombe et al. (1999). The scale asks about direct experiences of discrimination (e.g., 'I have personally been a victim of discrimination because of my weight and shape') and also indirect experiences of it (e.g., 'Prejudice against people with excessive weight has affected me personally': 1 = *very strongly disagree*, 7 = *very strongly agree*) and has been widely administered and validated in the social psychological literature (e.g., Schmitt, Branscombe, Postmes, & Garcia, 2014). It has also been used in previous studies of weight bias (Farrow & Tarrant, 2009). Scale items were averaged with higher scores indicating stronger perceptions of discrimination due to weight.

Finally, patients reported their *social identification* with the obesity treatment group using an 11-item scale (Cameron, 2004; Doosje, Ellemers, & Spears, 1995). The items comprising the measures have been validated in a range of healthcare settings (e.g., Haslam et al., 2014; Ysseldyk, Haslam, & Haslam, 2013; sample item: 'I identify with other members in my group at [the obesity service]'; 1 = *very strongly disagree*, 7 = *very strongly agree*). Scale items were averaged with higher scores indicating stronger social identification with the obesity group. It should be noted that a factor analysis (principal axis factoring, oblique rotation) was run to assess the discreteness of the items comprising the measures assessing *centrality of weight status* and *social identification* with the obesity treatment group. The analysis showed that the items loaded onto two distinct factor dimensions corresponding to the operationalisation of the measures, accounting for 40% of the total variance.

The descriptive statistics, Cronbach's alphas, and correlations for the measures are presented in Table 1.

3 | RESULTS

Post hoc power calculations using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that medium-sized correlated coefficients (.03) would have high statistical power (.80) with the obtained sample. The statistical analyses were conducted in JASP version 0.11.1 (JASP Team, 2019).

Female patients had higher BMI and were younger, on average, than males. Age was positively associated with ties to multiple external groups and negatively associated with perceived weight discrimination. No other effects involving patient demographic variables were significant. The number of group sessions that patients attended was positively associated with perceptions of group continuity, with patients attending more sessions when the group had greater continuity of membership. Number of groups attended was also associated with external social support: patients tended to attend more group sessions when they experienced lower levels of support outside of the group. Centrality of weight status was negatively associated with MGMs, with patients reporting greater centrality of excessive weight when they had weaker ties to other (external) social groups. Weight centrality was also associated with perceptions of discrimination, with greater salience of excessive weight reported at higher levels of weight discrimination. *Social identification* with the obesity treatment group was positively associated with four variables: weight centrality, weight discrimination, MGM and group continuity. Thus, patients reporting higher levels of social identification tended to report greater centrality of weight status, stronger perceptions of weight discrimination, weaker ties to external social groups and stronger perceptions of treatment group membership continuity.

A linear regression with stepwise selection was performed to identify variables most predictive of social identification with the obesity treatment group; this selection procedure was preferred as it gives every variable equal consideration in terms of the unique

variance that it predicts in the criterion variable. Social identification with the treatment group was specified as the criterion variable in the model and the remaining variables, including patient age, gender, BMI, group demographics and psychosocial outcomes, were entered as predictor variables. The criterion for exclusion was a probability value below .05, and post hoc power calculations using G*Power (Faul et al., 2007) indicated that predictors with medium effect sizes (.02) would have high statistical power (.80) with this sample size. The results from the linear regression are presented in Table 2.

Two significant models emerged explaining 25% of the variance in social identification with the treatment group (Model 1: $R^2_{adj} = .16$; Model 2: $R^2_{adj} = .25$). The first model contained one predictor variable, group continuity, whereas the second model contained group continuity and centrality of weight status. All remaining variables were excluded ($p \geq .16-.89$), and there was no indication of multicollinearity in the two models. Thus, identification with the treatment group was highest: (i) to the extent that the membership of the group was more continuous and (ii) when patients perceived themselves more centrally in terms of their overweight status.

4 | DISCUSSION

Social identification has been established as an important mechanism through which the effects of group interventions operate, including in obesity care (Tarrant et al., 2017), and it is known to impact on a range of health outcomes across different contexts (e.g., Haslam et al., 2016). Tarrant et al.'s (2017) study of patients enrolled on a group programme for severe obesity showed how social identification structured patients' progression through the programme, triggering provision and receipt of social support within the group and motivating behavioural change. Similarly, Nackers et al. (2015) showed that conflict between members of an obesity treatment group, which may signal an *absence* of social identification and lead to group schism (Sani, 2005), predicted poorer health outcomes. Thus, while treatment groups for severe obesity are designed to address the complex physical and psychological health needs of patients (Dietz et al., 2015; NICE, 2014), it is likely that they will be most successful in this regard to the extent that patients joining them establish a positive social identity *as group members*.

Little is known about factors that may predispose patients to develop new social identities in treatment group settings: what the mechanisms of social identity formation are. Yet managing the emergence, and subsequent progression, of patients' psychological connections with other members of treatment groups like the one studied here is likely to be critical to patient engagement with programme content—and ultimately contribute to programme effectiveness (Cruwys et al., 2019; Swancutt, Tarrant, & Pinkney, 2019). The current study provides early evidence that two such factors may underpin the emergence of a positive social identity in clinical treatment settings. The first factor, group continuity, can be understood as a 'design' factor in that it is something that can be controlled for at the programme outset (e.g., Borek et al., 2018). As well as potentially motivating

TABLE 1 Descriptive statistics, Cronbach's alphas, and correlations

	α	M (SD)	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Age (95% UBCI/LBCI)	N/A	51 (12)		-.42*** (-.22/.59)	-.19 (-.04/-.40)	-.11 (.11/-.33)	.04 (.27/-.19)	.01 (.24/-.21)	-.15 (.08/-.36)	.23 (.43/.01)	-.36** (-.01/-.54)	-.21 (.02/-.42)
2. Gender (95% UBCI/LBCI)	N/A	N/A			.38** (-.04/-.40)	.01 (.24/-.21)	.02 (.25/-.22)	.12 (.22/-.11)	-.01 (.21/-.23)	-.13 (.10/-.34)	.10 (.32/-.12)	.04 (.26/-.18)
3. BMI (95% UBCI/LBCI)	N/A	48 (6)				-.01 (.21/-.24)	.15 (.37/-.09)	.05 (.27/-.19)	.10 (.32/-.13)	-.11 (.12/-.33)	.23 (.43/-.00)	.08 (.30/-.15)
4. Social identification (95% UBCI/LBCI)	.85	4.56 (1.90)					.10 (.33/-.14)	.37*** (.55/.16)	.14 (.35/-.08)	-.13 (.10/-.34)	.19 (.40/-.04)	.37*** (.55/.17)
5. Number of sessions attended (95% UBCI/LBCI)	N/A	4 (2)						.26 (.47/.03)	-.29* (-.06/-.49)	.02 (.21/-.26)	.04 (.27/-.20)	-.08 (.16/-.31)
6. Group continuity (95% UBCI/LBCI)	N/A	4.31 (1.97)							.03 (.22/-.11)	-.06 (.17/-.28)	-.08 (.16/-.30)	.11 (.32/-.12)
7. Social support (95% UBCI/LBCI)	.93	5.57 (1.06)								.23 (.42/.01)	.09 (.31/-.14)	-.16 (.06/-.37)
8. Multiple group membership (95% UBCI/LBCI)	.91	2.80 (1.76)									-.01 (.22/-.23)	-.24* (-.02/-.44)
9. Perceived discrimination (95% UBCI/LBCI)	.90	4.55 (1.54)										.49*** (.64/.30)
10. Weight centrality (95% UBCI/LBCI)	.79	5.58 (1.13)										

Note: Gender coding: male = 1; female = 2.

Abbreviations: UBCI, Upper Bound Confidence Interval; LBCI, Lower Bound Confidence Interval.

* $p < .05$.** $p < .01$.*** $p < .001$.

TABLE 2 Linear regression with social identification with the treatment group specified as criterion variable

Model	Step 1				Step 2				Tolerance	VIF
	B	SE	β	t	B	SE	β	t		
1. Group Continuity	.19	.06	.42***	3.50	.17	.05	.37**	3.24	1.00	1.00
2. Group Continuity					.17	.05	.37**	2.24	.98	1.02
Weight Centrality					.24	.09	.32**	2.80	.98	1.02
R^2_{adj}	.16				.25					
ΔR^2	.17***				.10**					
ANOVA	(1, 58) 12.25***				(1, 57) 10.75***					
Excluded variables										
Age	-.01	.01	-.06	-.40						
Gender	.04	.27	.02	.15						
BMI	.00	.02	.02	.14						
Number of sessions attended	-.07	.05	-.19	-1.43						
Social support	.14	.10	.18	1.45						
Multiple group membership	-.03	.09	-.06	-.42						
Perceived discrimination	-.03	.09	-.06	-.36						

Note: Gender coding: male = 1; female = 2.

Abbreviations: BMI, body mass index; VIF, variance inflation factor.

** $p < .01$.

*** $p < .001$.

programme attendance, having continuity in a group's composition across programme sessions likely instils perceptions of patient familiarity and group homogeneity, which may smooth the way for within-group social interaction and sharing of experiences (e.g., Tarrant et al., 2016). Such social interaction, necessary to the formation of social identity, may be more inhibited in rolling (open) groups where there is lower continuity of membership across a programme. Thus, in the context of clinical obesity services, where patients are unlikely to know other patients upon entry to the programme, ensuring continuity in group composition may be an especially important variable to control in order to support social identity development.

The second factor reflects the wider, societal experiences that patients bring with them to treatment groups and in particular, the extent to which patients see themselves in terms of their health condition. In the current study, centrality of weight status was positively associated with discrimination experiences: patients were more likely to see themselves centrally in terms of their excess weight when they experienced high levels of weight-based discrimination. Discrimination due to weight is routinely experienced by people with obesity (Puhl & Brownell, 2001; Puhl & Heuer, 2009), and research indicates that discrimination experiences can become internalised (Wang et al., 2004) and perpetuate maladaptive eating behaviours leading to weight gain (Puhl et al., 2007; Puhl & Suh, 2015). Patients in the current study reported relatively high levels of discrimination overall (mean discrimination score of 4.55 on a 7-point scale). Notably, patients reporting higher levels of discrimination also tended to report weaker social group ties externally; and those with weaker group ties reported generally lower levels of social support outside of the

treatment group. Together, these findings support the observation that weight stigma contributes to feelings of social exclusion among victims (Westermann, Rief, Euteneuer, & Kohlmann, 2015) that may underpin centrality of self-perception in terms of weight.

It is useful to consider why centrality of weight status may be important to patients' social identification with new treatment groups. The group programme examined here facilitated early social interaction between group members and, through this, an exploration of 'patient stories' including the wider negative experiences of bias and social relations related to living with obesity. Patients in Tarrant et al.'s (2017) study, who identified with the treatment group, highlighted the value of discussing their experiences with other group members and coming to realise that these experiences were not individually unique but were in fact common within the group. Thus, despite their clear damaging psychological effects at the individual level, and potential to reinforce negative behaviours contributing to further weight gain, weight bias and associated psychosocial outcomes may nonetheless provide essential common ground for new group members to start building a shared social identity in treatment settings. An early activity for obesity treatment groups therefore might be to prioritise a supportive culture of sharing between patients and exploration (and emphasis) of commonality in past experiences. At the same time, it is important to recognise the important role played by group facilitators in monitoring the progression of their groups in order to ensure that the sharing of potentially negative past experiences is used to nurture a group atmosphere in which positive change behaviours can be implemented, rather than serving to reinforce patients' sense of isolation or wider (societal) rejection. In other

words, group facilitators need to support the development of shared social identity among group members and then work with the group to help it clarify and achieve its behavioural goals (see Tarrant, Haslam, Carter, Calitri, & Haslam, 2019).

5 | LIMITATIONS

A limitation of the current research is its reliance on a cross-sectional design. Such a design prohibits conclusions about causal relationships between study variables: for example, we cannot say for certain whether weight centrality influences treatment group social identification or whether social identification with a treatment group influences perceptions of weight centrality. The relationship between these two constructs may in fact be bidirectional: weight centrality might be a necessary condition for social identification, but group members may also come to see themselves more in terms of their weight—at least initially—as a result of the processes (e.g., sharing of stigma experiences and social support) that underpin social identity formation in treatment group settings. Further, this relationship itself may change across the course of a group programme: while weight centrality might be important early in a programme as group members start to establish psychological connections, other factors might become more closely tied to social identification as patients progress through the programme, perhaps reflecting changes in their physical and psychological health and interaction with programme material. Relatedly, the current study did not assess the relationship between social identification and health-related outcomes targeted by group programmes in obesity services (e.g., weight loss and dietary behaviour change). While positive effects of participation in group programmes on such outcomes have been documented, a fuller test of the social identity approach to health would consider both how shared social identity is established *and* also the impact of that process on clinical outcomes within the same design.

A second limitation of this study is its reliance on one sample of patients from a single obesity service. Variability exists between different obesity management services across the United Kingdom in the design and delivery of group programmes—for example, in terms of group size and session length (Swancutt et al., 2019). Such variability is rarely reported in research reports or clinical service evaluations (Borek et al., 2015) but nonetheless may influence the development of patients' social identification with treatment groups (e.g., group size might undermine social identification in very large groups, especially if there are limited opportunities for social interaction between members). The recent development of frameworks for coding features of group intervention design and delivery could help identify other potential variables that may form the basis of future investigations into social identity development in treatment settings. For example, one such framework, the MAGI framework (Borek et al., 2018), describes three sets of factors that potentially impact on group processes (including social identity): intervention design factors (e.g., group size, age and gender

balance), facilitation techniques (e.g., for promoting patient interaction) and facilitator/participant characteristics (e.g., past experiences and prior knowledge).

Finally, it would be worth exploring the dynamics considered here in treatment settings for other health conditions. Discrimination and a lack of social connections are experiences not restricted to severe obesity but are seen in people with other health problems and similarly may relate to centrality beliefs. For example, there has been a growth in interest recently in the role of 'recovery identities' in shaping health outcomes in treatment groups (e.g., for alcohol and substance use addiction; see Best et al., 2016). By definition, such identities exist in contradistinction to other, previous, social identities (e.g., 'addict'). While further research is required, it is possible that seeing oneself fundamentally in terms of the condition for which one is seeking treatment (*as an obese person, as someone who has an addiction*) may be a critical variable that opens up access to social identity-based behaviour change and recovery.

6 | CONCLUSION

Patients presenting to treatment services with severe obesity often do so after a sustained period of failed weight loss attempts and frequent exposure to pervasive negative societal experiences. Understanding and working with these experiences is likely to be important to the emergence of a new social identity within obesity treatment programmes and may underpin engagement with intervention content. While our investigation has focused on a group programme for the treatment of obesity specifically, we suggest that the mechanisms of social identity formation are likely to be similar in group programmes for other health conditions. Groups are increasingly used in the behavioural management of health, with group programmes existing for treatment of numerous conditions including diabetes, asthma and cardiac rehabilitation (Greaves & Campbell, 2007), as well as in services for alcohol and substance abuse (e.g., Alcoholics Anonymous). In a similar way that simultaneously experiencing *physical* pain can contribute to group bonding in novel groups (Bastian, Jetten, & Ferris, 2014), we suggest that group-based health interventions organised around the shared 'painful' *psychosocial* experiences of patients can provide a basis for common ground and provide the 'social glue' (Van Vugt & Hart, 2004) necessary for the successful delivery of health interventions.

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AUTHOR CONTRIBUTIONS

Sammyh S. Khan is responsible for day-to-day management of the project, led the data analysis and contributed to all aspects of the project, including design, data collection, interpretation of findings and dissemination. Mark Tarrant is the principal investigator/project lead and contributed to all aspects of the project, including design, interpretation of findings and dissemination. Katarina Kos contributed to project design, supported access to clinical data and contributed to dissemination. Mark Daly contributed to project design, supported access to clinical data and contributed to dissemination. Chloe Gimbuta supported preparation of datasets for analysis and contributed to data analysis and dissemination. Claire V. Farrow contributed to all aspects of the project, including design, interpretation of findings and dissemination.

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ENDNOTES

¹ Service evaluation summary report available on request from the authors.

² The age, gender and BMI profile of the study sample is representative of that of patients registered onto the obesity service: average age = 48 years ($SD = 13.7$); 67% (vs. 73%) females; average BMI = 46.9 kg/m² ($SD = 7.3$ kg/m²).

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